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MAY 6, 1950

TECHNOLOGY DEPT.

SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE



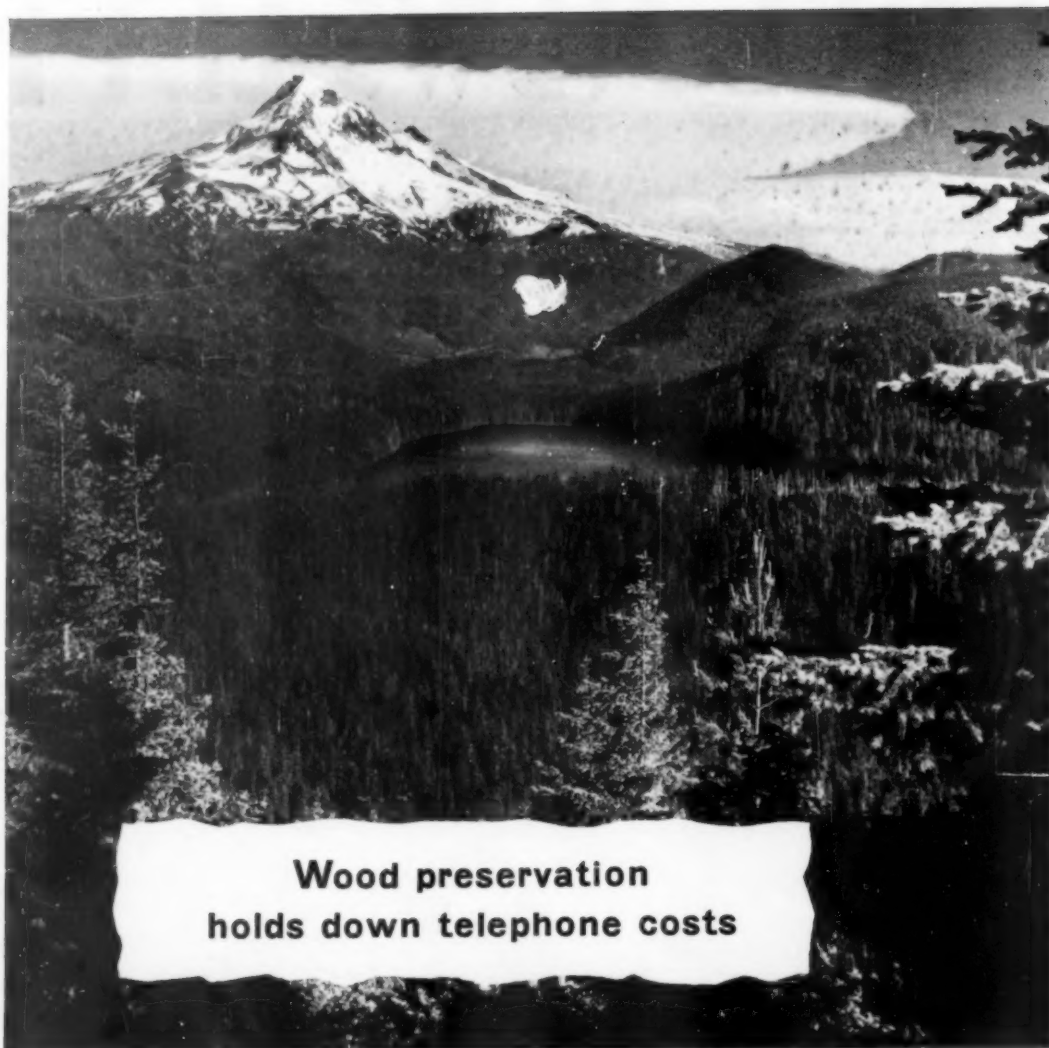
Volcanoes at Work

See Page 242

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Wood preservation holds down telephone costs

Poles are a substantial part of the plant that serves your telephone; making them last longer keeps down repairs and renewals that are part of telephone costs. So Bell Laboratories have long been active in the attack on wood-destroying fungi, the worst enemies of telephone poles.

Better, cleaner creosotes and other preservatives have been developed in co-operation with the wood-preserving industry. Research is now being carried out on greensalt — a new, clean, odorless preservative. Even the products of atomic energy research, radioactive isotopes, are used to measure penetration of fluids into wood.

Treated poles last from three to five times as long as untreated poles. This has saved enough timber during the last quarter century to equal

a forest of 25,000,000 trees. More than that, wood preservation permits the use of cheaper, fast-growing timber instead of scarcer varieties.

This and other savings in pole-line costs, such as stronger wires which need fewer poles, are some of the reasons why America's high-quality telephone service can be given at so reasonable a cost. It is one of today's best bargains.

**BELL TELEPHONE
LABORATORIES**



Exploring and Inventing, Devising and Perfecting, for Continued Improvements and Economies in Telephone Service.

NUCLEAR PHYSICS

New Particles Discovered

Photographs of the forked tracks of two new mesons, elementary particles born of cosmic rays, have been made. They live an extraordinarily short time.

➤ TO the strange and almost unimaginable things within the cores of the universe's atoms are now added at least two new particles which are believed to be "elementary" although with extremely fleeting existences.

They are new kinds of mesons, particles born of cosmic rays. A team of California Institute of Technology physicists, led by Nobelist Carl D. Anderson, discoverer of one of the two most common meson particles (named the Greek letter pi), reported to the American Physical Society in Washington their capturing of 34 photographs of forked tracks showing the life and death of these new unstable neutral and charged particles. It took 11,000 pictures to get the 34 forked tracks.

Less than three years ago two such pictures of cosmic rays smashing through cloud chambers were obtained by Drs. G. D. Rochester and C. C. Butler of the University of Manchester, England, who presumed they were the spontaneous transformation of unknown particles.

Now there seems little doubt that the particles are real.

The tracks in photographs taken both in Manchester and in Pasadena can only be explained by the occurrence of entirely new kinds of particles, charged and neutral. They live an extraordinarily short time, only two ten-billionths of a second, compared with a millionth and a hundred millionth of a second for the usual mesons, called mu and pi.

One of the new particles, of which 30 photographs were obtained, is a neutral one which breaks down into two others, each of which carries a charge. One of these secondary particles, and possibly both, appears to be one of the well-known mesons.

The mass of this first type of particle is still to be determined. All that the Caltech scientists can say at present is that its mass may range anywhere from 500 to 1000 electron masses, or from 2200 to 2500 electron masses, depending upon the identity of the secondary particles.

The second type of particle, of which only four photographs were obtained, is a charged one which breaks down into two secondary particles, one of which is neutral and the other charged. There is not sufficient data on this type to allow for a computation as to its mass.

In the research team with Dr. Anderson were: Drs. A. J. Seriff, R. B. Leighton, C. Hsiao, and E. W. Cowan.

Because the universe and everything in it consists largely of the extremely con-

centrated nuclei of atoms, the great push in physical science today is to understand and explore these atomic cores. Protons (hydrogen hearts) and neutrons (atomic bomb trigger particles) are in the nuclei, with the strange mesons (positive, negative and neutral) sort of playing catch with themselves as protons change into neutrons and the other way around. If just what happens is better understood, more energy might be extracted from the atom in bombs or otherwise.

Science News Letter, May 6, 1950

MEDICINE

More ACTH from Pig Pituitary Powder

➤ MORE ACTH for treatment of patients with rheumatoid arthritis and certain other diseases is on its way.

Scientists at Tufts Medical School and Pratt Diagnostic Hospital in Boston have found a way to extract almost 100% of the anti-arthritis hormone from pig pituitary powder. Heretofore the yield of the hormone has been very small.

With the increased yield obtained by the new extraction method, the price may go down to one-fifth the present cost.

ACTH extracted by the new method is not yet on the market. But trials on patients here with arthritis, rheumatoid spondylitis, asthma, regional enteritis, eczema, another skin disease called neurodermatitis and lupus erythematosus gave satisfactory results.

An almost pure preparation of ACTH has also now been obtained by the scientists in Boston, Drs. E. B. Astwood, M. S. Raben, R. W. Payne and A. P. Cleroux. Their new extraction and purification methods were first announced in the BULLETIN OF THE NEW ENGLAND MEDICAL CENTER.

Science News Letter, May 6, 1950

MEDICINE

Streptomycin Method More Effective against TB

➤ STREPTOMYCIN, most promising drug yet found for the treatment of tuberculosis, can be made even more effective by a new method of using it reported at the meeting of the National Tuberculosis Association.

The new method consists in giving the mold chemical every three days for 120 days (four months) while during the same four months another chemical, para-amino

salicylic acid (PAS for short) is given every day. Advantage of the method is that it prevents or delays the development of streptomycin-resistant strains of tuberculosis germs.

This method has been used in treating 102 patients at the Army Tuberculosis Center, Fitzsimons General Hospital, Denver, Carl W. Tempel reported.

Of the 102 patients, 18 have to date been treated for 120 days and 14 for 150 days by the new method without the emergence of streptomycin-resistant germs. By contrast, in another group given streptomycin alone every day for 120 days, almost three-fourths, 73.5%, developed streptomycin-resistant germs. In still another group given streptomycin and PAS every day for 120 days, resistant strains developed in 53.1%.

Science News Letter, May 6, 1950

GENERAL SCIENCE

Bronk New President Of National Academy

➤ DR. Detlev W. Bronk, president of the Johns Hopkins University, will become president of the National Academy of Sciences, the "senate" of American science, on July 1, as the result of the quadrennial election held in Washington.

He will succeed Dr. A. N. Richards of the University of Pennsylvania, now NAS president.

Dr. Bronk is chairman of the National Research Council, the operating body of the Academy. He is a biophysicist.



NAS PRESIDENT—Dr. Detlev W. Bronk, president of Johns Hopkins, was recently elected president of the National Academy of Sciences.

Dr. Roger Adams, head of the Chemistry Department at the University of Illinois, was elected foreign secretary. Dr. Walter S. Hunter, Brown University psychologist, and

Dr. Oliver E. Buckley, president of the Bell Telephone Laboratories, were elected to the Academy's council.

Science News Letter, May 6, 1950

MEDICINE

Predict '50 Polio Surge

➤ MORE cases of polio will be reported this year than last, but this does not mean that the 1950 epidemic will be worse than last year's record outbreak. The diagnosing and reporting of many more mild cases and the reporting as polio of cases which are something else will bring the total up, according to Dr. Justin M. Andrews, deputy officer in charge of the federal government's Communicable Disease Center in Atlanta.

However, some medical men who work with epidemic diseases—epidemiologists—are predicting that 1950 will see a surge of polio actually greater than last year's 42,000 cases. They base this opinion on a comparison of the number of cases so far this year with the number during the same period last year.

Actually, the entire history of polio is so erratic that it makes predictions almost impossible. Many workers in the field believe that not enough knowledge about the disease has been accumulated to make predictions possible.

Indeed, some epidemiologists believe that because so many persons, having had the disease last year, are now immunized against it, the 1950 polio outbreak might thereby be held down.

Arguing against the prediction of more polio this year, these experts point out that as some diseases receive publicity they become "fashionable" among doctors. General practitioners are prone to look for the symptoms of diseases in the public eye.

Many other virus diseases produce clinical illness simulating polio. A form of mumps, two forms of equine encephalomyelitis and

the St. Louis type of encephalitis are among these diseases.

Science News Letter, May 6, 1950

MEDICINE

Electric Eye Gives Safer Hypo Injections

➤ THE hypodermic injections of penicillin, vitamins and anesthetics your doctor or dentist gives can be even safer in future, thanks to a new electric eye machine for inspecting them.

The machine, developed by RCA Victor, is an adaptation of a similar machine for inspecting beverage bottles to see that there is no dirt or other gross contamination in them.

A very much more sensitive machine was needed, however, for inspecting ampules, the small glass containers in which medicines for hypodermic injections are sealed and sterilized. Heretofore this inspection has been done by girls and women in drug manufacturing plants. Because even trained, experienced inspectors did not always agree on whether there was a tiny speck of lint, glass or other contaminant in an ampule, it was impossible to have standards which could be enforced by the Food and Drug Administration.

To solve this problem and make ampules even safer, 16 members of the American Drug Manufacturers Association had the RCA Victor engineers devise the electronic ampule inspecting machine.

Science News Letter, May 6, 1950

CHEMISTRY

Water, Oysters Take to Plastic Packaging

➤ THE modern, plastic way is to fetch a bag of water—not a pail. It is done with pliable synthetic materials—polyethylene, polyvinyl or cellulose films or coatings.

Plastic bags of water are souvenirs of the National Packaging Exposition in Chicago, Ill.

Oysters in their own juice are one of the foods shipped now in transparent plastic packages.

Science News Letter, May 6, 1950

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PHYSIOLOGY

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GENERAL SCIENCE

Foundation Bill Passes

Nominations for the governing board of the Science Foundation are being made. The director will be appointed by the President with approval of Senate.

► **NOMINATIONS** for the 24-member Board that will govern the National Science Foundation are now being received by President Truman.

The recently passed legislation requests the President to give "due consideration" to recommendations for Board membership submitted to him by the National Academy of Sciences, the Association of Land Grant Colleges and Universities, the National Association of State Universities, the Association of American Colleges and by "other scientific or educational organizations."

Director of the Foundation will be appointed by the President, with the "advice and consent of the Senate." According to the law, however, his appointment shall not be made until the Board has had time to submit its recommendations for that post to the President. The Director of the Foundation will receive \$15,000 per year, and serve for six years. He is an ex-officio member of the Board.

Final authority to sign contracts as well as to grant scholarships and fellowships will remain with the Board. Although this makes administration of the act rather clumsy, it is not expected that it will be important during the first year of operation since it is doubtful if any contracts or student aid will be given out with the \$500,000 provided for the first year's budget.

The law authorizes the Board to set up an Executive Committee. Signing of contracts and granting of scholarships and fellowships remains vested in the Board, however. Committee members will serve for a two-year period. Board members serve for six years.

Congress must still pass the appropriation bill to make available the money authorized for actual operation of the Science Foundation.

The bill received bipartisan support in both houses. It was among the bills listed by President Truman as "must" legislation for this year. A previous bill was pocket vetoed by the President in 1947 because he objected to the administrative procedures it set up.

A federal science body to support basic scientific research was first proposed six years ago. Since 1946 it has been a part of President Truman's domestic postwar program and before Congress continually.

House and Senate conferees knocked out of the House-passed bill the controversial, extremely stringent loyalty provisions. The new bill calls for FBI clearance of persons doing work connected with atomic matters in the same manner as those working for the Atomic Energy Commission.

Likewise, scientists doing classified research for the Defense Department would come under that agency's security regulations.

Holders of fellowships and scholarships

would be required to file the normal loyalty affidavit and also sign the loyalty oath. The affidavit states that "... he does not believe in, and is not a member of and does not support any organization that believes in or teaches, the overthrow of the United States Government by force or violence or by any illegal or unconstitutional methods." The oath is: "I do solemnly swear (or affirm) that I will bear true faith and allegiance to the United States of America and will support and defend the Constitution and laws of the United States against all its enemies, foreign and domestic."

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ENGINEERING

Crewless Ship for Channel

► A COAST Guard lightship without a man aboard will be put into service off New York harbor this summer. One man at a remote control panel on Sandy Hook, N. J., will operate its light, radiobeacon and fog signal.

Named the EXP-99, the 91-foot, 215-ton vessel is now undergoing machinery tests at Curtis Bay, Md., just south of Baltimore. After a two-month trial, the crewless ship will be stationed near Scotland Light Ves-

sel, one of the three lightships now marking the sea approaches to New York.

Three diesel-powered generators will supply the electricity for the ship's powerful navigational aids. The operator on shore, by a flip of the finger, will be able to start, stop or shift generators through a radio signal.

With another button he can turn the fog signal on or off. The ship will carry two radio-beacon transmitters, shifting automat-



NOT ONE MAN ABOARD—Unique among the 37 manned lightships operated by the Coast Guard in U. S. shipping lanes will be Experimental Lightship 99, the lightship without a crew.

ically in case one should break down. The 10,000-candlepower light will have twin lenses. If both lights should burn out, a battery-powered emergency light would cut in. A signal will tell the shore operator that the main light is out.

EXP-99 carries no engines. It will have to be towed to its station and anchored. But by eliminating the 17-man crew normally carried on each of the 37 Coast Guard lightships now in service, the taxpayer will save nearly \$60,000 a year in operating costs and a third of a million dollars in the cost of the ship itself (\$375,000 as against \$750,000 for a manned lightship).

The ship will not sink, the Coast Guard adds. An automatic pump will keep water in the bilges at a safe low level. Enough fuel will be carried to allow the ship to remain on station, unattended, for nine

months, with each of the three generators operating continuously for three months.

The new ship will be the first such crewless U.S. lightship in ocean use. The idea is not new, however. From 1935 until 1939 the Coast Guard operated such a craft in Lake St. Clair, a small lake in the rivers connecting Lake Huron and Lake Erie.

If EXP-99 gives satisfactory service, the Coast Guard said, it may lead to the gradual replacement of all manned lightships.

Lightships are used where a powerful light is needed, yet the water is too deep to build a lighthouse. Engineering developments in off-shore oil drilling structures in the Gulf of Mexico, however, may someday make deep-sea construction practical and all lightships obsolete.

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MEDICINE

From Now On: Polio

The greatest research drive in history may produce the answer to the polio enigma in the next 50 years. Over 42,000 were polio victims in the year 1949.

By WATSON DAVIS

Sixth of a series of glances forward in science.

► HEART disease and cancer are great killers, largely unconquered. But probably the most intensely studied disease today is infantile paralysis, thanks to the march of dimes.

Poliomyelitis is also close to being the least known, scientifically. We do not know precisely its cause, although it is a virus. We have no practical method of preventing it. We do not know how it is spread, except that it is person to person. We have no cure for it, only symptomatic treatment, effective in many cases.

Some 200 scientists are now researching upon phases of the disease and 510 projects in 91 institutions have been underway in the 11 years of this great polio campaign.

Most of the dime money is used to treat those who need the expensive and extensive nursing and medical care that can often restore them to useful life. The national polio push is unique in giving patient care when and where needed. Never before have so many been ill of polio, due to the unhappy burst of cases last year, some 42,375 boys and girls, men and women. This is quadruple the number expected for a more or less normal year, although the guess for 1950 is some 25,000.

As in any disaster, care of the injured is a first consideration. But safety and prevention is the proper long-time endeavor. This is the task of research, although success may be long in arriving and the detours always are many. Thus millions of dollars of the public's dime money go for research while tens of millions go for actual treat-

ment.

In past years there have been high hopes for preventive measures, such as vaccines, and even wondrous cures, through chemicals. Not yet are these possible. There is confidence that these will be achieved in the future.

There are at least three kinds of polio virus, immunity to no one of which will protect against the others. Monkeys are the only animal except man on which experiments can be done, and they cost much money. Despite this, the next few years may bring an effective protective vaccine. Combined with a test to tell whether a person already has the kind of infantile paralysis prevalent, a protective vaccine might control the disease as influenza can similarly be checked.

Numerically the disease is not rated a major one, yet four out of five people over 15 years of age have had contact with the virus judging from the polio antibodies in their blood. Millions actually get the disease without seeing a doctor or ever knowing it.

Chemicals, like the sulfa drugs and penicillin, have conquered many diseases. It is not over-optimistic to hope that one of them will be found that will stop the polio virus before it invades the nerve cells and causes crippling or death. False alarms of such success should not blind us to this possibility.

Until research provides the weapons against the disease itself, the care of patients must go on. Many now walk and lead useful lives thanks to methods of physical medicine developed in the past few years.

For the future, continuing the research drive now in progress, there will be attempts to:

A. Find exactly where the viruses arise, how they are spread and then do something about preventing them from coming into contact with people.

B. Discover some drug to destroy the disease once it invades, keeping it from destroying the nerve cells, causing crippling or death.

C. Explore and perfect immunization against the disease so that it can be prevented like smallpox.

D. Discover still better methods of treatment.

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GENETICS

Yellow Siamese Cats, Gentler than Blue, Bred

► DON'T start wondering if you should see a Siamese cat that is yellow instead of the usual seal color or bluish sort.

Scientific application of heredity has produced such yellow Siamese cats at the Jackson Memorial Laboratory, Bar Harbor, Me.

The new kind of kitty has a pale pastel, straw colored body, deep orange ears, feet and tail. It looks at you with clear blue eyes.

With the change in color, there has come a very affectionate and gentle disposition and less aggressiveness than in the usual breed. Only a few of the yellow Siamese cats have been produced, and the new gentleness may not hold true when larger numbers are raised.

When a sufficient number of this new kind of cat are available to be distributed, its striking and handsome appearance is expected to create a sensation among cat fanciers.

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BLONDE FELINE—Product of scientific breeding, the yellow Siamese cat is reputed to be more affectionate, more gentle and less aggressive than the blue Siamese.

PHYSIOLOGY

Upright Man Bucks Gravity

Man's present brain was developed as a consequence of his defiance of gravity. No other animal can maintain the upright position for as long as man.

► MAN is man and not an ape because his ancestors a million years or so ago dared to buck the force of gravity and stand upright for longer periods than any other living creature.

He forced his heart to drive quantities of blood to his head against the pull of gravity. As a consequence the human brain was able to develop to its present state.

The heart disease and high blood pressure which are the leading cause of human deaths today are the by-product of this gravity-defying step in man's evolution.

Studies showing that the development of man's brain has come through the physiologic changes forced on his body by the head-up position were reported by Dr. Sidney W. Britton of the University of Virginia at the meeting of the National Academy of Sciences.

A strain of apes might be bred, Dr. Britton suggested, which would have brains so nearly human that they might perform many tasks for humans, though doing this "might lead again to traffic in slavery."

Dr. Britton's studies were made by putting animals from snakes and opossums to monkeys and man on tilt tables and observing the changes as they were swung from horizontal to upright positions.

A rabbit within 30 to 60 seconds of being held upright begins to struggle. After five or 10 minutes the animal grows drowsy. Shock and death follow, sometimes within 10 minutes of being tilted to the head-up position.

Within 15 minutes after being held upright dogs and monkeys show 20% to 40% drops in blood pressure in arteries supplying the head. The return flow of blood through the veins from the legs to the heart is also slowed. And brain waves slow down and show convulsive patterns, indicating change from normal brain activity.

Man, however, can be swung from horizontal to upright position and kept there for 15 minutes or longer without drop in blood pressure through the arteries supplying the head, without slowing of blood return from legs to heart and without changes in brain waves.

Man can comfortably remain upright, usually with high level brain activity, during most of the 14 to 16 hours of an ordinary active day. But even high grade anthropoid apes, Dr. Britton found from round the clock moving picture studies, can sustain the upright position for about only one-half this time.

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disease is dreaded because of the horrible convulsions suffered by its victims and the complete certainty of death once symptoms become apparent. Because of the uniform fatality among rabies victims, the great hope of survival in rabies is prevention," declared Dr. Cox.

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MEDICINE

Sulfa Drug Triple Mixture Acts against Dysentery

► A TRIPLE mixture of sulfa drugs has a greater curative action in dysentery than either of two potent sulfa drugs alone, a five-man medical team from New York Medical College and Flower and Fifth Avenue Hospitals reported at the meeting of the Federation of American Societies for Experimental Biology.

The triple mixture consisted of equal amounts of sulfadiazine, sulfamerazine and sulfacetimide. Given every day for a week, it cured 20 of 24 children during a dysentery outbreak. Sulfadiazine cured only 11 of 27 children in the same time, and the other sulfa drug, a nonabsorbable one, phthalylsulfacetimide, cured 11 of 28 in the same time.

The better results with the triple mixture, the doctors think, must be due to its having a greater effect on the germs in the intestinal tract.

The scientists reporting this work are: Drs. David Lehr, John T. Luetters, Arnold J. Capute, Harold Abramson and Lawrence B. Slobody.

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VETERINARY MEDICINE

New Rabies Vaccine

► SUCCESS with a new vaccine for protecting dogs against rabies, or hydrophobia, is reported by Drs. Herald R. Cox and Hilary Koprowski of Lederle Laboratories, Pearl River, N. Y.

The vaccine is made from a live rabies virus modified by growing in chick embryos. Its success was found from tests on 12,000 dogs.

The new vaccine does not contain any mammalian brain or spinal cord tissue. Until now, the vaccines used were made from killed rabies virus grown in tissues from the brain and spinal cords of animals, or a fixed live virus from the same sources. All vaccines derived from brain or spinal cord tissue potentially may cause moderate or severe paralysis in the period immediately following vaccination. In over 10,000 of the 12,000 dogs vaccinated, no paralysis after vaccination has been observed.

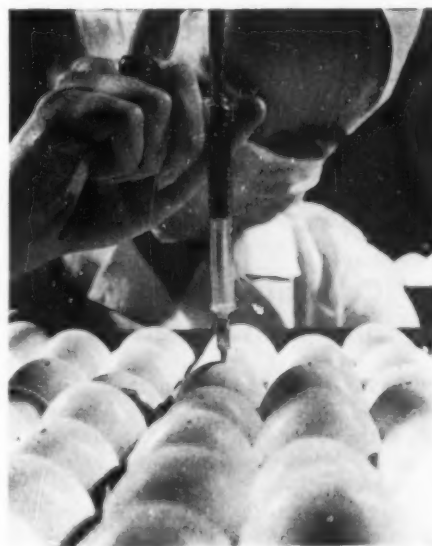
The high degree of immunity resulting from the vaccine is another advantage. All dogs inoculated with a single injection of

the new chick embryo vaccine were found to be completely resistant to street virus five to 27 weeks later, while 70% of the unvaccinated dogs died from the virus.

Heretofore the best immunization practice has called for the injection of fresh preparations, for vaccines lose their immunizing power as they age. However, the chick embryo vaccine, which maintains its immunizing capacity for at least 18 months, is a highly stable preparation. The new vaccine is also easily standardized.

Known as the Flury strain, the virus strain used in the production of the vaccine was first isolated by Dr. H. N. Johnson of the Rockefeller Foundation from the brain of a child named Flury who died of rabies. Drs. Cox and Koprowski, researchers in the field of virus diseases, helped in the development of the vaccine.

Rabies, according to Dr. Cox, still constitutes a most serious public health problem. "The number of human beings affected by rabies seems rather small, but the



VACCINE FOR RABIES—The vaccine for dog immunization is produced from live virus which has been modified by growth in chick embryos. Chick embryos, above, are inoculated with a live virus.

VETERINARY MEDICINE

**Stainless Steel Tails
For Dogs Speed Healing**

► YOUR dog may come home some day with a stainless steel tail. Treat him kindly. His real tail, underneath the steel, might have been run over by a truck, bitten by a bigger dog or caught in a revolving door.

Veterinarians in England are experimenting with stainless steel tubes as surgical dressings for injured tails, the American Veterinary Medical Association reported in Chicago.

The tubes work wonders, the vets report, by staying on dogs' and monkey's tails. These animals like nothing better than to bite, scratch, or pull off any covering on their posterior appendages. They find that difficult when the bandage is made of steel.

The tubes allow ventilation of the wound, thus promoting healing in a second way. They are held in place by a few turns of a special bandaging material, the British vets report.

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VETERINARY MEDICINE

**Liquids Vital
To Sick Dogs**

► MORE important than drugs, blood or food for critically sick pets are liquids, Dr. E. E. Sweebe of North Chicago, Ill., told the national convention of the American Animal Hospital Association in Denver, Colo.

"A diseased animal can lose all of the fat and half of the protein in its body and still survive, but death may result if even one-fifth of the body's normal water reserve is lost," he said.

Solutions containing amino acids, highly nourishing protein substances, are used for dogs dehydrated by severe vomiting, diarrhea or fever. The liquids must be administered quickly if vital body fluids are being drained away by sickness.

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ENGINEERING

**TV Coaxial Cable Replaced
By Single Insulated Wire?**

► A SINGLE wire with a special insulation and funnel-shaped terminals may replace the expensive, intricate coaxial cable now used in television transmission and in telephony.

This low-cost telephone and television transmission line was revealed in New York to the Institute of Radio Engineers by the inventor, Dr. George Goubau of the U. S. Army Signal Corps Engineering Laboratories, Fort Monmouth, N. J.

Another important application is in radar. An immediate use, according to Signal Corps officials, is an inexpensive means of distributing television programs to city

homes on a "wired wireless" basis, which is now high in cost. It also may be possible to pipe television programs at relatively low cost to areas now out of television range; for instance, to midwestern farm belts.

The device is dubbed a "G-string" after the initials of the inventor. His work is based on a paper published in 1899 by A. Sommerfeld of the University of Munich. This paper had to do with wave propagation along a cylindrical wire of finite conductivity.

In Dr. Goubau's invention, a wire is used which is coated with a thin layer of a dielectric material. This results in a shrinking of the cross-section of the electric field that otherwise would extend far from the conductor. Transmission lines have been built and tested for their applicability for microwaves, he stated. The measured transmission loss is a fraction of that in coaxial cables, he said.

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MEDICINE

**Bobby-Soxers Are
Right—About Shoes**

► THE "bobby-soxer" was given a pat on the foot by Dr. Carlo Scuderi of Chicago at the meeting in Chicago of the American Association of Industrial Physicians and Surgeons.

Coming generations, he said, will benefit from the bobby-soxer's introduction of a trend to low-heeled, broad-toed shoes.

Science News Letter, May 6, 1950

ENTOMOLOGY

**Chemical Very Effective
Against Mites**

► TESTS of a new chemical show that it is highly effective against the tiny disease-carrying insects, called mites, that do millions of dollars' damage yearly to crops.

Dr. Oliver Grummitt of Western Reserve University reports in the journal *SCIENCE* (April 7) that di-(p-chlorophenyl) methyl-carbinol is the most promising of a group of compounds related to DDT that he and his co-workers investigated.

Effective weapons against mites are indispensable since the widespread use of DDT. Not only is DDT against mites, but it promotes their growth by destroying insects that would otherwise destroy the mites.

At the concentration levels normally used, only mites are affected by this new class of compounds.

Red spider, European red mites, two-spotted mites, and Pacific mites can be controlled, he states. There is no danger of plant damage under ordinary spraying conditions. The chemicals poison through contact, Dr. Grummitt believes.

Science News Letter, May 6, 1950

IN SCIENCE

INVENTION

**Roller Skate Lights Show
Fancy Skating Gyration**

► HEADLIGHTS for roller skates, an invention which has just received a patent from the government, shows the skater the rough spots in the pavement ahead. They also warn sidewalk pedestrians of approaching danger.

They have another use, however. It is in skating exhibitions where they would enable spectators to follow the movements of the skater with greater ease. They would not illuminate the wearer, however, but just the "underfoot" and the arcs, forward, backward or upward, of the skating feet.

Lights and batteries, similar to those in ordinary flashlights, are in a unit easily attached and removed from the under part of the skate. A tiny switch is used to turn the lights on or off. The inventor is Gerald L. Hooley, Urbana, Ohio. The patent number is 2,502,566.

Science News Letter, May 6, 1950

MEDICINE

**Test Tube Stomachs Aid
Fight Against Cancer**

► TEST tube stomachs are helping scientists in Salt Lake City in the fight against stomach cancer, one of the leading causes of cancer deaths.

The stomachs go on functioning for an hour after being removed from their mice owners. They "even digest a hearty meal," Dr. H. W. Davenport, of the University of Utah, reported.

Vitamins, hormones and other factors are tested in these stomachs in an effort to learn what mechanisms influence formation of ulcers and cancer. The "most normal of normal mouse stomachs," found in a cancer-resistant strain of mice, C-57-Black, are used in the studies. The work is supported by the American Cancer Society.

Science News Letter, May 6, 1950

MEDICINE

**Take Salt Before Heavy
Job for More Benefit**

► TAKE some salt before you go on the job, if you work in heavy industry or elsewhere in a very hot environment. More benefit comes from taking the salt before exposure to the heat than during or after such exposure, Dr. Simon Rodbard of Michael Reese Hospital reported to the American Association of Industrial Physicians and Surgeons meeting in Chicago.

Science News Letter, May 6, 1950

SCIENCE FIELDS

PSYCHIATRY

Sexual Psychopath Does Not Exist; Abolish Term

► THERE is no such thing as a "sexual psychopath" and the term should be abolished, Dr. David Abrahamsen, Columbia University psychiatrist, declared at the second annual Forum for the Study and Prevention of Crime in New York.

He based this on a two-year study of 102 sex offenders at Sing Sing Prison.

The sex offenders, he found, make up a group of people who suffer from various types of mental disorders and social maladjustments. They all have in common sexual deviation, but this is found in other types of offenders. A study of 1,800 other inmates at Sing Sing who showed that 30% of them had committed sex crimes at one time or another.

"Sex offenders do repeat their crime," Dr. Abrahamsen stated. He found that 34 of the 102 had committed sex crimes prior to the offenses for which they had been committed.

Alcohol is a prominent factor when sex crimes are committed. It was often associated with or a precipitating cause of the crime in more than one-half the cases studied.

Persons who commit sex crimes should be sentenced in accordance with their personality makeup, not in accordance with the crimes they commit, Dr. Abrahamsen recommended. This is because sex crimes are "ordinarily the result of emotional conflicts and therefore personality makeup."

Science News Letter, May 6, 1950

PUBLIC HEALTH

Gnats May Be Source of Pink Eye

► YOUR vacation in the South and certain other sections of the country may some day be more enjoyable, if U.S. Public Health Service research on the problem of eye gnats turns up some means of controlling those pesky insects.

Dr. R. A. Vonderlehr, medical director in charge of the Service's Communicable Disease Center in Atlanta, announced that studies on the common eye gnat of the southern United States are underway at a field station at Thomasville, Ga. They will continue, he said, through the summer months, when the eye gnats are most prevalent.

The Public Health Service, however, is not primarily interested in eye gnats because they are a nuisance. Their scientists want to discover if the abundance of those insects in some parts of the country has

any relation to the prevalence of conjunctivitis, commonly called sore eyes, or pink eyes.

Dr. Richard P. Dow, Communicable Disease Center entomologist at Thomasville, is in charge of the insect studies, under Dr. Dale R. Lindsay. Dr. Dorland Davis, of the National Institutes of Health, Bethesda, Md., directs the epidemiological studies, which are being conducted in Thomasville by Miss Virginia Hines and Miss Helen Cameron, Communicable Disease Center nurses.

Although eye gnats have been found in every section of the United States, they are most prevalent in California's Coachella Valley, the Rio Grande Valley of Texas, and in Louisiana, Mississippi, Alabama, Georgia, Florida, and South Carolina. They are most abundant wherever there is extensive farming or truck raising in sandy or muck soils in those states.

Science News Letter, May 6, 1950

PSYCHOLOGY

USSR Laborers Friendlier Than French to Germans

► RUSSIAN workers forced into labor in Germany during the war were more friendly toward their German bosses than were French workers and much more so than were Italian workers. And this in spite of the fact that Russian workers were singled out for the worst treatment by the Nazi authorities.

This sympathetic feeling of the Russian worker toward the Germans and a corresponding feeling of sympathy of the Germans toward the Russian workers was revealed by a re-examination of an opinion survey conducted by the U.S. Strategic Bombing Survey in Germany right after the end of the war in Europe.

The new conclusion was reported to the Eastern Psychological Association by Dr. H. L. Ansbacher, psychologist of the University of Vermont.

Such mutual friendliness in the midst of a general atmosphere of hostility is explained by Dr. Ansbacher as due to the fact that German industrial management often handled the Russian workers according to good principles of industrial relations and circumvented brutal Nazi regulations in order to do so. Friendliness was also favored by the fact that the Russians and Germans worked together in factories under conditions which were often better than the Russians had been accustomed to at home. Living conditions in Germany were also much better than those they had known in Russia.

"The hopeful conclusion for better international and inter-group relations," Dr. Ansbacher told the psychologists, "is that even in a generally hostile atmosphere areas of mutual goodwill are likely to exist because large groups are not uniform masses. If the conditions under which goodwill arose could be multiplied, the goodwill itself could be spread."

Science News Letter, May 6, 1950

MEDICINE

Cell Transplanting Method May Aid Cancer Fight

► PURE breed White Leghorn chickens can be made to grow up with dark patches of skin and feathers like barred Plymouth Rock chickens by a new technic of cell transplantation.

The cell transplanting, done when the chicks are in the embryo stage in the egg, is expected to lead to new knowledge of how cancer cells spread through human bodies and also to lead to new technics on use of hormones and drugs in medicine.

The experiments were reported by Drs. Paul Weiss of the University of Chicago and Gert Andres of the University of Berne, Switzerland, at the meeting of the National Academy of Sciences.

The cell transplantation is said to be the first successful attempt to inject separated cells into a growing body and trace their course as they pass through the blood circulation.

Ground tissues from barred Plymouth Rock embryos were injected into a vein of developing embryos of three-day-old or older White Leghorns. The injected cells passed through the hearts of the developing White Leghorns and out into the arteries. Then they escaped into the tissues, reached their normal locations in the skin and feathers and multiplied and differentiated there in normal fashion.

Acute disturbances in the circulation of the chickens were caused by the injected cells, killing about one-quarter of the developing embryos. Out of 340 injected, 23 survived past the hatching stage. And like cancer cells, the injected cells were seen to crowd out the normal cells.

Science News Letter, May 6, 1950

ENGINEERING

Microbes Damage Electric Cables Laid in Soils

► SOIL microbes, not soil chemicals, do the damage to rubber-insulated electric cables laid in the soil. And they do more damage to natural rubber than to the synthetics.

This is the conclusion of John T. Blake and Donald W. Kitchen of the Simplex Wire and Cable Company, Cambridge, Mass., reported to the American Institute of Electrical Engineers.

It has been demonstrated, they stated, that the loss of insulating resistance in active soil was due neither to water absorption nor to the action of soil chemicals, but to the attack of living micro-organisms.

They stated also that certain microbes consume natural rubber hydrocarbons, leaving visible surface pitting, but there were no visible signs of attack on synthetic rubber insulation. In both cases, they added, action of the microbes caused lower insulation resistance.

Science News Letter, May 6, 1950

ENGINEERING

Volcanoes Go to Work

Volcanic steam from the Valley of Larderello is converted into cheap power for the Italian people. Such areas all over the globe are promising sources of power.

By EDWIN MULLER

See Front Cover

➤ THE approach to the "Valley of Hell" is through an earthly paradise.

From Florence you drive for hours through the lovely hills of Tuscany. Over the terraced slopes the slender spires of cypress rise above the soft green of the olive trees. Age has mellowed the blue and rose tints of the farm buildings. A quiet and peaceful countryside.

The first intimation of the Valley is a muttering growl of which you are aware two or three miles away. It rises in volume as you approach.

You top the crest of the last ridge and the famous Valley of Larderello lies beneath you.

Seething Action

Here the earth—as much of it as you can see through the clouds of steam—is raw and ugly. On its surface—twisting and crawling like the tentacles of an octopus—are miles of pipe line. Each group of them comes to a focus at one of the big powerhouses. The valley is dotted with oil derricks and with strange, unfamiliar structures like hour glasses 20 stories high.

Everywhere jets of steam are puffing out of the earth, hundreds of them. They rise and merge in great, billowing clouds, as shown on this week's cover of SCIENCE NEWS LETTER. A strong smell of sulfur comes to you.

The growl has increased to an almost deafening roar. It comes from a jet much bigger than the rest, one that is shooting out a column of steam with an overwhelming force that makes the works of man look puny.

This is Larderello, a valley sitting on top of an unborn volcano—a volcano which supposedly never erupted through the outer crust, but might. At Larderello, the white-hot interior of the earth comes closer to the surface than is normal—so close that the steam generated by the molten lava can be reached.

That is actually what men are doing here. They are boring down, tapping the live steam, converting it into electric power which is supplying a rapidly increasing part of the industrial and transportation needs of Italy.

The big jet is the last well to come in—two days ago. Although they have already capped it, they haven't yet been able to harness its power.

You drive down to see it. When you get out of the car 100 yards away they give you

cotton to put in your ears. Otherwise blood might start from your eardrums, as when a big gun is fired close by. This is like the firing of a big gun—but going off continuously. The earth around you is shaking.

Going closer you see that the jet is about two feet in diameter. When it comes out of the earth it is clear and transparent, it condenses and whitens high above. They tell you that it is shooting out at a speed of more than 1200 feet per second, and a temperature of nearly 400 degrees.

This, the newest of the 50 wells at Larderello, came in before they meant it to. They had been drilling several weeks—a crew much like an oil crew in Texas or Oklahoma. Indeed this rig comes from an Oklahoma supply company.

The process is much the same as drilling for oil. As the drill grinds its way down a stream of water is poured into the hole. It is pumped out again as mud, bringing up the crumbled rock excavated by the drill.

When the drill was down 600 yards they got the first signs that something was about to happen. Instruments showed that the temperature at the bottom of the hole was rising rapidly. Then the mud coming out was boiling. Soon after that the drill ceased to descend. That meant that steam was beginning to come in below, was holding up the drill.

The pipes for conducting the steam

were not quite in place, so they pulled out the drill and filled the hole with water. A column of water 600 yards deep exerts a tremendous pressure at its base—ordinarily enough to keep the steam down.

This time it didn't. One day at sunset, as the crews were changing shifts, the well let go.

Well Explodes

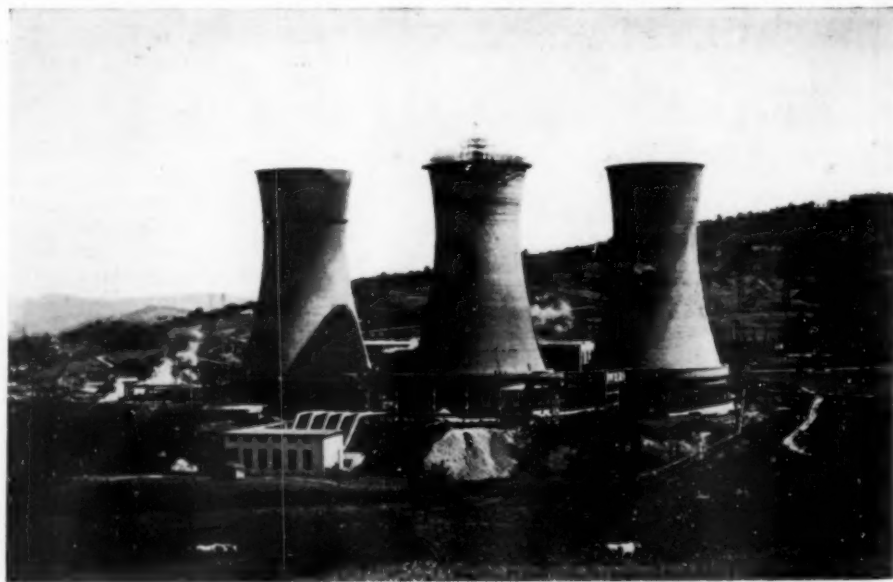
The explosion was heard plainly in a town 15 miles away. First the whole column of water was shot out in an instant, to a great height. Then the terrifying jet of steam. At first it was black. It hurled red-hot rocks into the sky. The crew cowered to the earth as the rocks came crashing down among them. By good fortune nobody was hit.

That night no one in the valley could sleep, not even with cotton in the ears and mattresses over the windows.

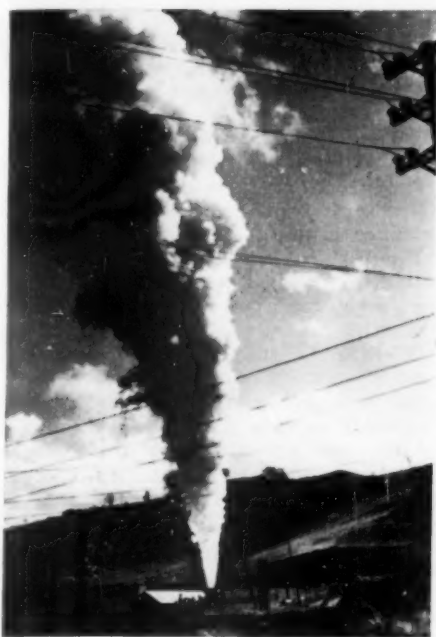
They'll manage to harness it in a few days—in spite of its apparently irresistible power. The jet will go roaring off through the long lines of pipe to the generators.

The power plants are half the size of a city block. So far there are five in the valley. Inside are the rows of big turbine generators, into which the steam roars. The boiling water of the condensed steam is conducted into the hour-glass buildings, where it is cooled and carried back to use in the generating process.

Outside the plants are the transformers. From them the power lines, on their long stilts, go marching away across the hills, carrying the power to the State Railways, to factories, to a variety of uses.



SKYSCRAPER COOLING TOWERS—Pipes carry steam to these 20-story-high condensation towers. Structures such as these and oil derricks dot the Valley of Hell.



BABY BLOWER—A jet of steam puffs from a small "steam well." Volcanic power is largely an untapped resource.

A sixth plant is nearing completion. It alone will supply one billion kilowatt hours per year.

Origin of Volcanic Steam

What is this volcanic steam and how does it come into being? We don't know precisely. But this much seems probable: The interior of the earth is a white-hot mass, its temperature enormously high, possibly above 7000 degrees Fahrenheit.

In most parts of the earth we are protected from this superfurnace by a crust 40 or 50 miles thick. But in some places this covering has weakened and cracked. That happens because the crust is still settling. A stratum of rock miles thick may crack, one part of it slip down. Then the surface of the earth shivers and trembles in earthquakes.

This cracking and shifting of the crust may lessen the pressure on the white-hot mass beneath. If it lessens enough the mass partly liquefies, becomes a glue-like substance that we call lava. The pressure from beneath may squeeze this up toward the surface of the earth, like toothpaste from a tube. If it gets close enough to the surface it bursts its way out, tearing aside anything in its way. Then a volcano is formed.

The force which bursts out is super-heated steam. As to the origin of that steam, scientists are not certain. It may be from water that seeps down from the surface of the earth. Or from ocean water that flows through newly-formed cracks. Or from the water, in molecular form, which is a part of nearly all solids, even of rocks.

When the water comes in contact with or even near the lava, it is changed to steam

at a very high temperature and pressure. Supercharged steam was the most powerful explosive known until man began to deal with the forces of the atom. It is far more powerful than TNT.

The first man to make any commercial use of Larderello was a Frenchman, the Count de Larderel, son of a family ruined by the French Revolution, who went to Italy as a young man, and in 1814 settled in Livorno, where he became a prosperous merchant. He noted that the steam bubbling up from the mud pools of the valley left a deposit of boric acid as it condensed. He got a concession and exploited the deposits. His descendants for three generations made money from them. Even today, Larderello is the only source of boric acid in Europe.

Experiments Began in 1894

Experiments to utilize the natural jets of steam for power began in 1894. Ten years later the first results were obtained. Not very spectacular results—they managed to light five electric bulbs from power generated by the steam.

An Italian, Prince Ginori Conti, was now owner of the Valley. He continued experiments, began to drill for steam of higher pressure at deeper levels. He tried to devise ways of harnessing the steam when it was tapped.

The first big well came in in 1931. Before they were able to cap it the great jet of steam roared on for weeks, deafening the valley.

The development of Larderello continued. It came under the control of the Italian State Railways. For the first time substantial amounts of capital were available. More big wells were drilled, new generators installed.

With the end of the war came a crushing setback. The retreating Germans smashed the whole installation. Drilling rigs were destroyed, generators were blown into a mass of useless junk. The wells were uncapped and all roared together, wasting their power.

But within two years all the damage was repaired.

Aid from ERP

With ERP the development went forward more rapidly than before. The most modern American drilling equipment was installed. Generators of greater capacity were put to work.

Larderello begins to meet an urgent need of Italy, long handicapped by a shortage of power. It has no coal, until recently no oil. Its hydroelectric power, though substantial, is not enough to meet industrial demands. According to the latest figures, although Italy leads Europe in the production of hydroelectric power, it produces only one-fourth as much of it per capita as the United States.

Larderello is already producing about

eight percent of Italy's power. The new power plant, when completed, will produce an additional five percent. And the significant fact is that Larderello is apparently producing power cheaper than by any other method.

True, it will be necessary to keep drilling new wells. The volume of steam delivered by a well slowly decreases. The production of the 1931 well has, in 19 years, decreased to 28 percent of its original volume. Not because the reservoir of steam is decreasing. Rather it's because the crack which conducts the steam from the subterranean furnace to the well is being slowly encrusted by the impurities in the steam.

There is no evidence that the amount of steam available is diminishing. On the contrary, it will be renewed as long as there is water in our atmosphere and as long as that water comes in contact with the hot interior of the planet.

There is no apparent limit to operations such as Larderello. They have drilled a new well within 100 yards of an old one. The new well brought in a big volume of steam. The volume and pressure of the old one did not change. And there are other volcanic areas in Italy which, the engineers believe, would produce just as well.

Untapped Resource

So are there in other parts of the world—New Zealand, Iceland. The "Valley of Ten Thousand Smokes" in Alaska could possibly supply an enormous volume of power. And there are areas in California and other parts of the West which could be used. American engineers have recently been inspecting Larderello with such operations in mind.

We in the United States worry sometimes about our sources of power, the coal and the oil that we are using up at such a rapid rate. While we are waiting for the atom to take their place it might be a good idea to use some of that vast reservoir of steam that is waiting down below.

This article was prepared for the SCIENCE NEWS LETTER in cooperation with the READER'S DIGEST. It will appear shortly in that magazine.

Science News Letter, May 6, 1950

PLANT PATHOLOGY

Pine Tree Insect Pest Discovered

➤ SUDDEN death to a grove of pines in southern Connecticut led to the discovery in New Haven of a new insect pest. Dr. George H. Plumb, entomologist at the Connecticut Agricultural Experiment Station, identified the culprit as a new member of a scale insect family known as *matsucoccus*. It causes the needles of infected trees to turn yellowish, then brick red as the tree dies.

Science News Letter, May 6, 1950

CLIMATOLOGY

Floods May Hit Northwest

► THE Pacific Northwest may follow North Dakota's water-swept Red River Valley with rampaging spring floods this year. The potential is there in a heavier-than-normal snow pack over most of the Columbia River basin.

For six months the flow of the Columbia has been far above normal, reports the U.S. Geological Survey. The agency warns of possible Northwest floods in its semi-annual water resources review covering the entire nation.

How the still-unmelted 1950 snow comes off the watershed—slowly and evenly or in raging, dyke-breaking torrents—will be determined by the weather. The great atmospheric tides which control weather could bring tides of water into mountain valleys of Washington and Oregon.

Because the mountain snows are at far higher elevations than over the rest of the country, the dangerous melting season comes later in the Northwest than in the East and Midwest. Normally it arrives in May and early June.

In March the U.S. Weather Bureau in Portland, Oreg., reported to the Geological Survey, "Not only is the water content on the high snow courses well above normal, but the snow line is well down for this time of year. The snow pack is heavy over most of the Columbia Basin.

"If normal melting conditions prevail, the southern streams will have peaked before the northern ones reach a high stage . . .

(and) little if any damaging high water will occur down the lower Columbia.

"However, should the consistently heavy snow pack melt simultaneously . . . should weather conditions keep much of this heavy snow pack in storage later than normal, serious damage from fast runoff will be expected."

Translated from the jargon of the government report, that spells flood.

Similar conditions have already spelled flood for isolated thousands in North Dakota, northwestern Minnesota and southern Manitoba, where the Red River of the North has reached its highest levels in a century.

The ice broke in the headwaters of North Dakota's rivers in the second week of March, a Geological Survey engineer said. Then the rivers refroze, and 30 inches of snow fell between March 23 and 27. In the last week in March, the snow turned to

rain in some areas.

The result was that the three prime causes of spring floods—snow melt, rainfall and ice break-up—happened nearly simultaneously.

Raging tributaries of the Red River, shackled by ice jams but pushed from behind by melting snow drifts, broke from their banks. "Walls of water" rolled across northern plains.

As the crest of the flood moved downstream into Canada, the situation in Manitoba grew steadily worse until the peak of the swollen river passed.

Elsewhere in the nation, the six-month review of the Geological Survey showed conditions ranging from flood to drought.

Throughout the Ohio and Mississippi Valley states, runoff during the winter was excessive, with minor local floods reported in all months except November.

From Texas to California across the Southwest, streams have been consistently low. In the Northeast, where fall and winter drought tightened water supplies, the situation has improved, the Geological Survey reported.

Science News Letter, May 6, 1950

PSYCHOLOGY

Work or Labor Class?

► DO you belong to the working class? Do you belong to the laboring class?

These questions are not synonymous as some people have thought. The membership in the two classes in America differs not only in numerical strength but in terms of attitudes, Dr. Richard Centers, of the University of California at Los Angeles, found from opinion surveys. His findings are reported in the JOURNAL OF ABNORMAL AND SOCIAL PSYCHOLOGY.

Repeated surveys have shown that when Americans are asked, "To what social class do you feel you belong—middle class, or upper, or lower?" 88 % will call themselves middle class. Six percent feel that they are in the upper class and another 6 % place themselves in the lower class.

Dr. Centers repeated the opinion survey, adding a fourth social class to the list. In one survey he called the fourth class the working class and in another he called it the laboring class.

The working class is far more popular, he found. Over half the adult population identifies itself with the working class; only about a third claims membership in the laboring class.

People identifying with the laboring class are poorer, and tend to be more commonly of manual occupations, of somewhat lower educational level, and more often members of unions than those who say they belong to the working class.

There is more support for the New Deal and the Democratic party in the laboring class than in the working class and more preference for government rather than private ownership of industry.

In general, the survey indicates, Dr. Centers concludes, that the laboring and working classes are not actually two separate classes but that the laboring class is an inner and more proletarian core of the working class.

Science News Letter, May 6, 1950

AERONAUTICS

On-and-Off De-Icing for Jet Planes Is Better

► A SYSTEM for de-icing the wing surfaces of jet airplanes that is both lighter and more efficient than present equipment has been developed by Dr. Myron Tribus of the engineering department at the University of California at Los Angeles.

As a practical result, it may remove one of the obstacles that hitherto prevented commercial airlines from using jet transports.

Up until now, one of the problems of jet planes has been what to do about heavy icing conditions, which require weighty and costly continuous heating devices. Dr. Tribus' studies show that intermittent heating is the key to the problem because the formation of ice itself liberates heat. On the other hand, continuously heated surfaces are constantly above freezing and thus are not able to take advantage of the heat liberated by the formation of ice.

"Intermittent heating is thermodynamically more efficient for all phases of de-icing and requires lighter equipment," Dr. Tribus says.

Science News Letter, May 6, 1950

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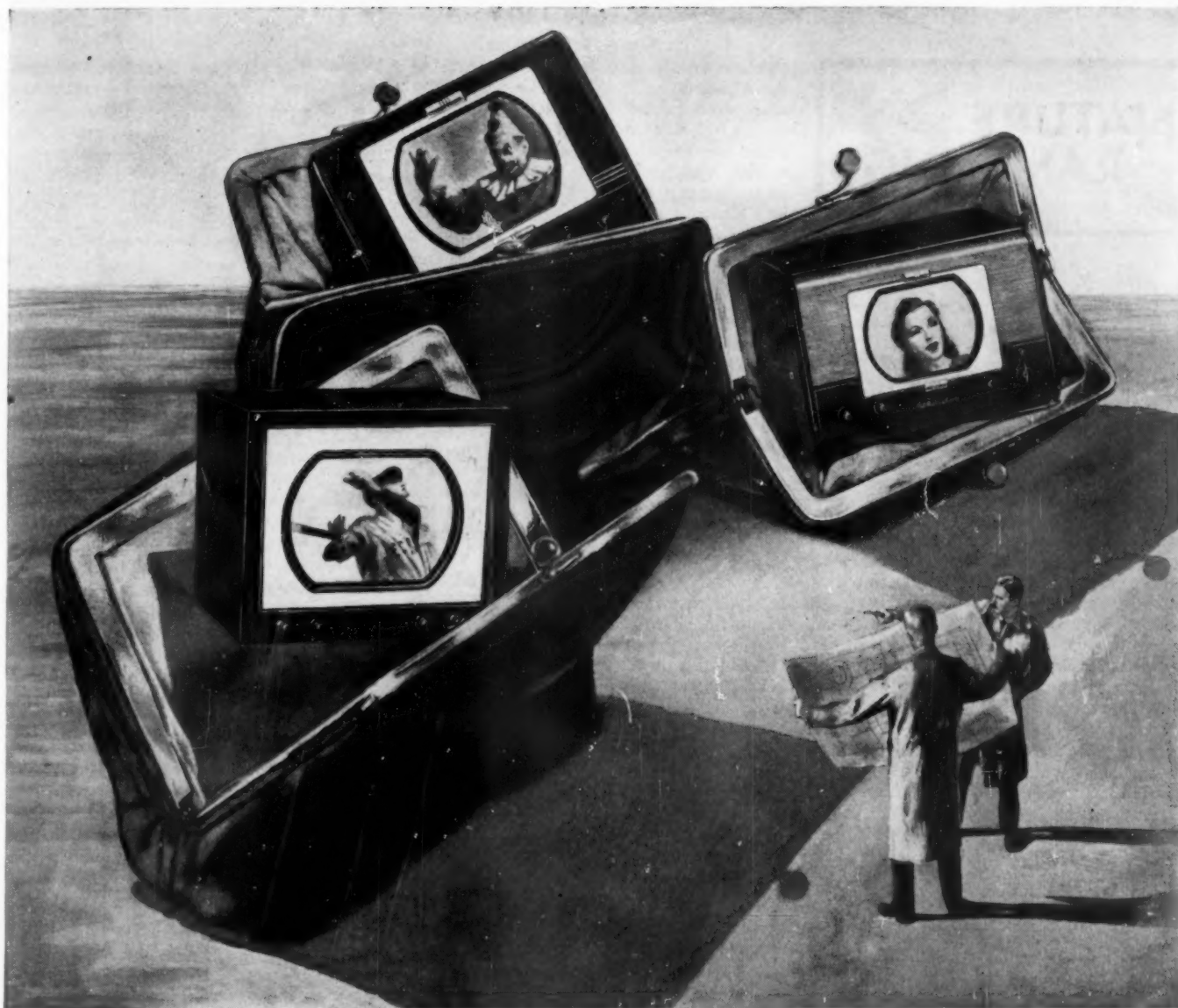
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Developments by RCA scientists have made Television part of family life in homes of all incomes.

*How research fits television into **more purses***

Remember when television was "just around the corner," and guesses at receiver cost ranged to thousands of dollars? Came *reality*, and pessimists were wrong. Home television sets were reasonable, grew more so year by year.

One factor has been research at RCA Laboratories. For example: In 1949, RCA scientists perfected the glass-and-metal picture tube—so adaptable to mass production that savings of 30% in tube cost were made. Again, these scientists and development engineers learned how to replace complex

parts with less costly, and more efficient materials. A third contribution was the use of versatile *multiple-purpose* tubes—so that one could do the work of several!

Most important, the savings effected by RCA scientists have been quickly passed on to you, the consumer. RCA Laboratories is known as a great center of radio, television, and electronic research. It is indeed an institution which fits RCA products into more purses!

See the latest in radio, television, and electronics at RCA Exhibition Hall, 36 W. 49th St., N. Y. Admission is free. Radio Corporation of America, RCA Building, Radio City, N. Y.



New RCA Victor 16-inch television receiver, a leader in the 1950 line.



RADIO CORPORATION of AMERICA

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ZOOLOGY

NATURE RAMBLINGS



Mountain Goats

► **HIGH** up in the Rockies and in the Cascade Mountains, in the more inaccessible reaches of Montana, Idaho, and Washington, the kids are being born. From the human point of view, the footing is tricky and the scenery breath-taking, but the mother mountain goat is equally unaware of both danger and beauty. And the kid is too preoccupied getting its breakfast and testing its mountain legs to notice anything else.

Throughout the end of April, May, and June the kids are born, singly or in litters of two. The lying-in takes place in some well-hidden cranny, from which the mother ventures to forage for her own repast, returning at frequent intervals to cater to her hungry offspring.

This period of infantile isolation does not last long. Very soon, a matter of days, mothers and kids congregate in nursery herds a couple of dozen strong, feeding together over a comparatively restricted area. The adult males do not participate in this domestic band, preferring to range far, alone and untrammelled.

The mountain goat is a member of the

antelope family, and is a close relative of the Alp-climbing chamois. It is marvelously adapted to its chill and precarious environment. It has a long shaggy coat with a dense soft woolly underfur. Its white color renders it all but invisible against snow, and its suction-cup hoofs and elastic, spreading toes give it a sure-footed agility that sometimes seems to defy the laws of gravity.

The prodigies of climbing and leaping that these animals are capable of always brings out a mingled exasperation and admiration in those venturesome people who try to get close. Owen Wister once described following tracks through snow and soft shale. The marks showed that the perverse animals "invariably chose the sharpest slant they could find to walk on, often with a decent level just beside it that we were glad enough to have. If there were a precipice and a sound flat-top, they took the precipice, and crossed its face on juts that did not look as if your hat would hang on them."

Another observer, Frederic Irland, has recorded a winter trip in the Cascade Mountains. "We had nearly burst our hearts by climbing for an hour or two," he writes, when suddenly they spied four mountain goats "on the edge of an abyss of the kind which Dore has portrayed in illustrating

Dante." The goats saw them too, and scampered away "along scandalous precipices."

After a perilous pursuit "wholly unsuited to nervous persons . . . we saw those four fool goats again, the big one and a small one looking back around the corner to see if we were really coming." The men never did catch up with the goats.

Science News Letter, May 6, 1950

PUBLIC HEALTH

Polio Poll May Show How It Spreads

► A "GALLUP polio" may help determine the causes of polio and the ways in which it is carried.

Interviewers of the Communicable Disease Center in Atlanta of the U.S. Public Health Service will question samples of the populations of three cities on headaches, coughs, diarrhea and other minor ailments which sometimes are the symptoms of mild forms of polio.

The cities are Charleston, W. Va., Topeka, Kans., and Phoenix, Ariz.

Experts will examine the people who report that they have had these minor ailments to determine whether there is evidence in these persons of having had polio.

While these Gallup surveys are continuing the experts will wait until a real outbreak of the "frank" crippling polio occurs—as they know it must inevitably in one of those three cities. In the meantime they will be gathering valuable knowledge of the causes of the waves of these "minor morbidities" as the experts call them. They will be finding out what the real trouble was which produced epidemics of headaches, for instance, never reported to the doctor.

When polio that paralyzes hits one of these medically Gallup-ed towns, they may find out that it is accompanied by a wave, a noticeable increase, of one of the minor morbidities. With this evidence, along with other knowledge, they will know that many more people had polio than was actually reported by the doctors and they will know where the cases are.

Although there were 42,000 cases last year, putting an unprecedented strain on those fighting the disease, for the purpose of the experts trying to find out how the disease is carried and why, there aren't nearly enough cases of polio. By this is meant that only those cases which can now be identified as polio are reported—others which disguise themselves as coughs or headaches remain unknown.

It is for this reason that polio presents such an erratic picture, popping up in towns far apart, seeming to hit only one member of one family and all members of another, skipping several city blocks. The cases of polio that are reported are too far apart, both in space and time, to give the doctors and the research men a complete enough picture of how polio travels and where it comes from.

Science News Letter, May 6, 1950

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ANTHRACNOSE OF CEREALS AND GRASSES—G. W. Bruehl—U. S. Dept. of Ag. Tech. Bull. No. 1005, Gov't. Printing Office, 37 p., illus., paper, 15 cents. A report on this disease which causes much damage to oats and rye.

ARCHAEOLOGICAL SURVEY OF OWEN COUNTY INDIANA—Vernon R. Helmen—*Indiana Historical Bureau*, 49 p., illus., paper, free upon request to publisher, Indianapolis, Indiana. The report of a survey made between June 15 and September 15, 1948.

THE AUTOBIOGRAPHY OF ROBERT A. MILLIKAN—Prentice-Hall, 311 p., illus., \$4.50. The dean of American scientists writes of his life's experiences. (See SNL May 13, 1950).

CHEMICAL ENGINEERS' HANDBOOK—John H. Perry—McGraw-Hill, 3rd ed., 1942 p., illus., \$15.00. A standard reference brought up-to-date.

CHILDREN'S BOOKS FOR SEVENTY-FIVE CENTS OR LESS—Mabel Altstetter—*Association for Childhood Education International*, 49 p., paper, 50 cents.

CLASSICAL MECHANICS—Herbert Goldstein—*Adison-Wesley*, 399 p., illus., \$6.50. A text for an advanced course in classical mechanics.

COMMUNITY HEALTH ORGANIZATION—Ira V. Hiscock—*Commonwealth*, 4th ed., 278 p., \$2.75. A summary of what is needed in any community in the way of public health service.

EDUCATORS GUIDE TO FREE FILMS—Mary Foley Horkheimer and John W. Diffor, Compilers—*Educators Progress Service*, 9th ed., 355 p., paper, \$5.00. Information on currently available free films. For the film-user and educator.

ELECTRONIC MECHANISMS OF ORGANIC REACTIONS—Allan R. Day—*American*, 314 p., illus., \$3.50. A college text for an advanced course in organic chemistry which places emphasis on electronic mechanisms.

FIRST PRINCIPLES OF ATOMIC PHYSICS—Richard F. Humphreys and Robert Beringer—*Harper*, 390 p., illus., \$4.50. An introductory college text-book.

FRICTIONAL PHENOMENA—Andrew Gemant—*Chemical*, 497 p., illus., \$12.00. Frictional processes in all fields of engineering are presented.

FUNDAMENTALS OF ADLERIAN PSYCHOLOGY—Rudolf R. Dreikurs—*Greenberg*, 117 p., \$2.00. A non-technical introduction to "Individual Psychology." The introduction is written by Alfred Adler.

THE FUTURE IN MEDICINE: The March of Medicine, 1949—New York Academy of Medicine—*Columbia University Press*, 160 p., illus., \$2.50. This volume has drawn upon the fields of law, sociology, anthropology, physics, criminology, endocrinology, hematology, immunology and psychiatry to present an informative exposition of their relation to the individual and to the communal well-being.

HUMAN ECOLOGY: A Theory of Community

Structure—Amos H. Hawley—*Ronald*, 456 p., illus., \$5.00. A monograph on the development and nature of community structure.

HUMAN FERTILITY AND PROBLEMS OF THE MALE—Edmond J. Farris—*The Author's Press*, 211 p., illus., \$5.00. Latest advances in this field. Prepared for the physician and the well-informed layman.

MANUAL ON FATIGUE TESTING—Committee E-9 on Fatigue—*American Society for Testing Materials*, 82 p., illus., paper, \$2.50. A guide to the so-called conventional fatigue tests of engineering materials.

VEGETABLE INVESTIGATIONS UNDER DRY-LAND CONDITIONS AT MANDAN, N. DAK.—W. P. Baird—Gov't. Printing Office, 44 p., illus., paper, 15 cents. A report giving the results obtained from growing different kinds of vegetables in the dry-land garden over a period of 26 years.

RACES: A Study of the Problems of Race Formation in Man—Carleton S. Coon, Stanley M. Garn and Joseph B. Birdsell—*Thomas*, 153 p., illus., \$3.00. An analysis of the racial

differences among the living peoples of the world in terms of the interplay of hereditary and environmental forces.


SELECTED WRITINGS OF EDWARD SAPIR: In Language, Culture and Personality—David J. Mandelbaum, Ed.—*University of California Press*, 617 p., \$6.50. Presents writings which express Sapir's ideas in linguistics, cultural anthropology and psychology.

SHARK FISHING POTENTIALITIES OF THE PHILIPPINE SEAS—Herbert E. Warfel and John A. Clague—Gov't. Printing Office, U. S. Dept. of Interior Res. Report No. 15, 19 p., illus., paper, 15 cents. An experiment performed by the Fish and Wildlife Service to ascertain the potential production of vitamin A oil from sharks and the possibility of establishing a fishery in the Philippines for the purpose of producing such.

TRANSIENT PERFORMANCE OF ELECTRIC POWER SYSTEMS: Phenomena in Lumped Networks—Reinhold Rudenberg—*McGraw-Hill*, 832 p., illus., \$12.00. An enlarged edition of the classic German text. A survey of the field of transients.

YEAR BOOK 1949: January 1, 1949—December 31, 1949—*American Philosophical Society*, 467 p., paper, \$1.50. Annual reports of the committees on research including one written on "The Science Fairs in the South" by Watson Davis, Director of Science Service. Members of the Society are listed.

Science News Letter, May 6, 1950



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❁ **REAR-WHEEL SEAT** on a bicycle, for the carrying of a passenger, is easily convertible into a luggage-carrying basket in an invention just granted a patent. The basket sides, of wire grille, are hinged to the four edges of the rectangular seat, and can be turned up or down.

Science News Letter, May 6, 1950

❁ **CORD SHORTENER**, to take up slack in the electric cord from outlet to lamp or other household device, is merely a plastic plate with a slot in each end. The cord is wound around the plate and passed through the end slots to hold it in position.

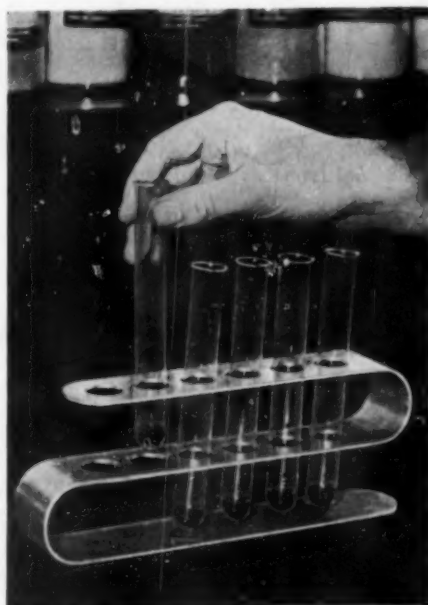
Science News Letter, May 6, 1950

❁ **LIFESAVING DEVICE** for swimmers, recently awarded a patent by the U. S. Government, is an inflatable bag worn ordinarily hidden under the trunks. When needed, it is pulled out and upward, and filled with air by means of a tube which is then near the user's mouth.

Science News Letter, May 6, 1950

❁ **LOUNGE CHAIR** for the beach is an inflatable affair made of a tough plastic which, when filled with air, forms a seat and an inclined back-rest. Deflated, it can be tucked into an ordinary beach bag. It has no rigid parts.

Science News Letter, May 6, 1950



❁ **TEST TUBE RACK** for the laboratory, shown in the picture, is a flat "S" in shape and is made of aluminum. This corrosion-resistant metal rack is superior to the long-used racks of wood because it is more durable and can be used in drying ovens.

Science News Letter, May 6, 1950

❁ **BUMPER CUSHIONS**, made of a rubber material, are fashioned to be fixed on the uprights on automobile bumpers. The thick pads lessen shock in minor collisions, can be applied on both front and rear bumpers and are made to fit various car models.

Science News Letter, May 6, 1950

❁ **LATCHLESS DOORS** on an electric refrigerator, household type, close without a sound and form a tight uniform seal with the cabinet. The tough plastic gaskets of the door are lined with one-inch Alnico permanent magnets which are attracted to the steel cabinet as the door swings shut.

Science News Letter, May 6, 1950

❁ **FILTERS** of an inexpensive paper-like material are usable for filtering fine radioactive particles from contaminated gaseous wastes and also for filtering ventilation air or the gases from a factory smoke stack. They contain paper-making and mineral asbestos fibers.

Science News Letter, May 6, 1950

❁ **AIR-DRYING UNIT**, utilizing silica gel to absorb the moisture, consists of a small canister suitable to place in a fishing tackle box or a linen closet. A small window in the holder permits viewing the gel, which needs oven-drying when it becomes pink.

Science News Letter, May 6, 1950

Do You Know?

Sterling silver usually contains 7.5% copper.

Benzene hexachloride is an effective insecticide to use where the odor is not important.

Winter or summer, hot or cold, the bobwhite rarely strays outside a ten-mile radius of his native hatch.

Non-rhythmical noises, such as those of street and traffic, are the most annoying type because the ear can not readily adjust to them.

Pribilof islands in the Bering sea, noted as the famous breeding place for the fur seal, have some 3,000,000 of these animals there each summer; they migrate south for the winter.

What weathermen call the hydrologic cycle refers to the three stages through which water passes—water in oceans, lakes and streams; water in atmosphere; and water in the soil.

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